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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Byung-Nam Kim

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EXAMINER

LE, HOANGANH T

ART UNIT

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2821

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,381	Applicant(s) KIM ET AL.	
	Examiner HoangAnh T. Le	Art Unit 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/2/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed on February 04, 2008 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, "the short circuit line" has no antecedent basis.

Claim 9 recites "the second radiator is stretched out in both right and left directions based on the feed point". From the claim, it is not clear how the second radiator can be stretched out in both right and left directions based on the feed point since the second radiator being stretched out to an end of the first radiator as cited in claim 6?

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1,6, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al (the US Patent No. 6,239,765).

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Regarding claim 1, the Johnson et al reference teaches in figure 6 a built-in antenna mounted on the inside of a wireless communication terminal, comprising: a feed point 32 for supplying electromagnetic signals to the antenna; and a first radiator 26d,26e for omni-directionally releasing the electromagnetic signals in a first band of electromagnetic waves, wherein the feed point 32 is positioned substantially near a center of an electrical length of the first radiator.

Regarding claim 6, figure 6 shows a second radiator (the meander line part of 26e) for releasing second band of electromagnetic waves, the second radiator being stretched out to an end of the first radiator.

Regarding claim 15, wherein the first band is Digital Command Signal band and the second band is Global Standard for Mobile Communication band (col. 3, lines 45-62).

6. Claims 1,3, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Nagano et al (the US 2006/0017624).

Regarding claim 1, the Nagano et al reference teaches in figures 4-5 6 a built-in antenna mounted on the inside of a wireless communication terminal, comprising: a feed point 14 for supplying electromagnetic signals to the antenna; and a first radiator 22 for omni-directionally releasing the electromagnetic signals in a first band of electromagnetic waves, wherein the feed point 14 is positioned substantially near a center of an electrical length of the first radiator 22.

Regarding claim 3, wherein the feed point is position at a location of $\frac{1}{4} \lambda$ from an end of the first radiator (para 0083).

Regarding claim 6, figure 7 shows a second radiator 42 for releasing second band of electromagnetic waves, the second radiator 42 being stretched out to an end of the first radiator 22.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4,5, and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (cited above) in view Gudilev et al (the US Patent No. 5,936,587).

Regarding claims 4, and 7, the Johnson et al reference teaches in figures 5 and 6 a short circuit pin 34 for grounding the antenna; a short circuit line 26a (M) for releasing the supplied signals partially, the short circuit line being positioned between the short circuit pin and the feed point. Johnson does not teach the length of the short circuit line being half of the electric length of the first radiator. It would have been an obvious matter of design choice to have the length of the short circuit line of Johnson et al being half of the electric length of the first radiator, since the length of the short circuit line is used to operate the matching net work as taught by Johnson et al in column 5, lines 1-8.

Regarding claims 5 and 8, Johnson et al teaches every feature of the claimed invention, excluding the short circuit line having a meander line structure. However, the Gudilev et al teaches in figure 5 the use of a short circuit line having a meander line structure in order to reduce the physical length of the antenna (col. 4, lines 20-27). Since one of ordinary skill in the art would recognize the benefit of reducing the physical length of the antenna, it would have been obvious to provide Johnson et al with the short circuit line having a meander line structure as taught by Gudilev et al.

Regarding claim 9, Gudilev et al teaches in figure 6 the second radiator 24,25 being stretched out in both right and left directions based on the feed point 32 and releases omni-directional electromagnetic waves by distributing the second band electromagnetic signals to an entire contact surface.

Regarding claims 10, it would have been an obvious matter of design choice to have the conductive wires of first and second radiators having a width of $1.5 \times 10^{-3} \lambda$, and the second radiator has comprises a meander line structure with a space of $2.0 \times 10^{-3} \lambda$ and a total length of 0.7λ , while the second first radiator has comprises a total length of 0.35λ , where λ is a wave length of electric wave released by the first radiator at a resonance frequency, since such a modification would have involved a

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mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

Regarding claim 11, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have each of the conductive wires being a nickel-plated copper material having a thickness of $0.6 \times 10^{-3} \lambda$ and the conductive wire is supported by a frame, which is obtained by injection-molding polycarbonate (PC)-acrylonitrile butadiene styrene (ABS) mixture, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Regarding claim 12, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first and second radiators are formed by using copper tape, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice

The limitation," by using a low-pressure injector to prevent corrosion of the surface" is a "process limitation and no patentable weight is given, see *In re Stephens et al* 145 USPQ 656 (1965).

9. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (cited above) in view of Maoz et al (the US Patent No. 6,466,176).

Regarding claims 13-14, Johnson et al reference teaches every feature of the claimed invention, excluding the first and second radiators being formed of flexible printed circuit board (PCB) and fixed by using an adhesive material, and the second radiator being veered vertically or diagonally to a surface including the first radiator.

The Maoz et al reference teaches in figures 3-3c the first and second radiators 104, 109 being formed of flexible printed circuit board (PCB) 101 and fixed by using an adhesive material, and the second radiator being veered vertically or diagonally to a surface including the first radiator (figures 3b-3c) in order to improve the characteristic of the antenna.

Since one of ordinary skill in the art would recognize the benefit of improving the characteristic of the antenna, it would have been obvious to provide Johnson et al with the first and second radiators being formed of flexible printed circuit board (PCB) and fixed by using an adhesive material, and the second

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radiator being veered vertically or diagonally to a surface including the first radiator as taught by Maoz et al.

Response to Arguments

10. Applicant's arguments with respect to claims 1, and 3-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HoangAnh T. Le whose telephone number is (571) 272-1823. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HoangAnh T Le/
Primary Examiner, Art Unit 2821